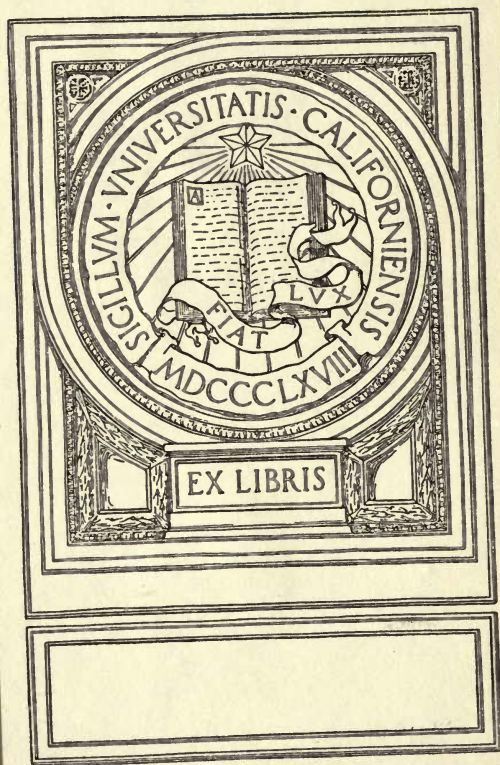


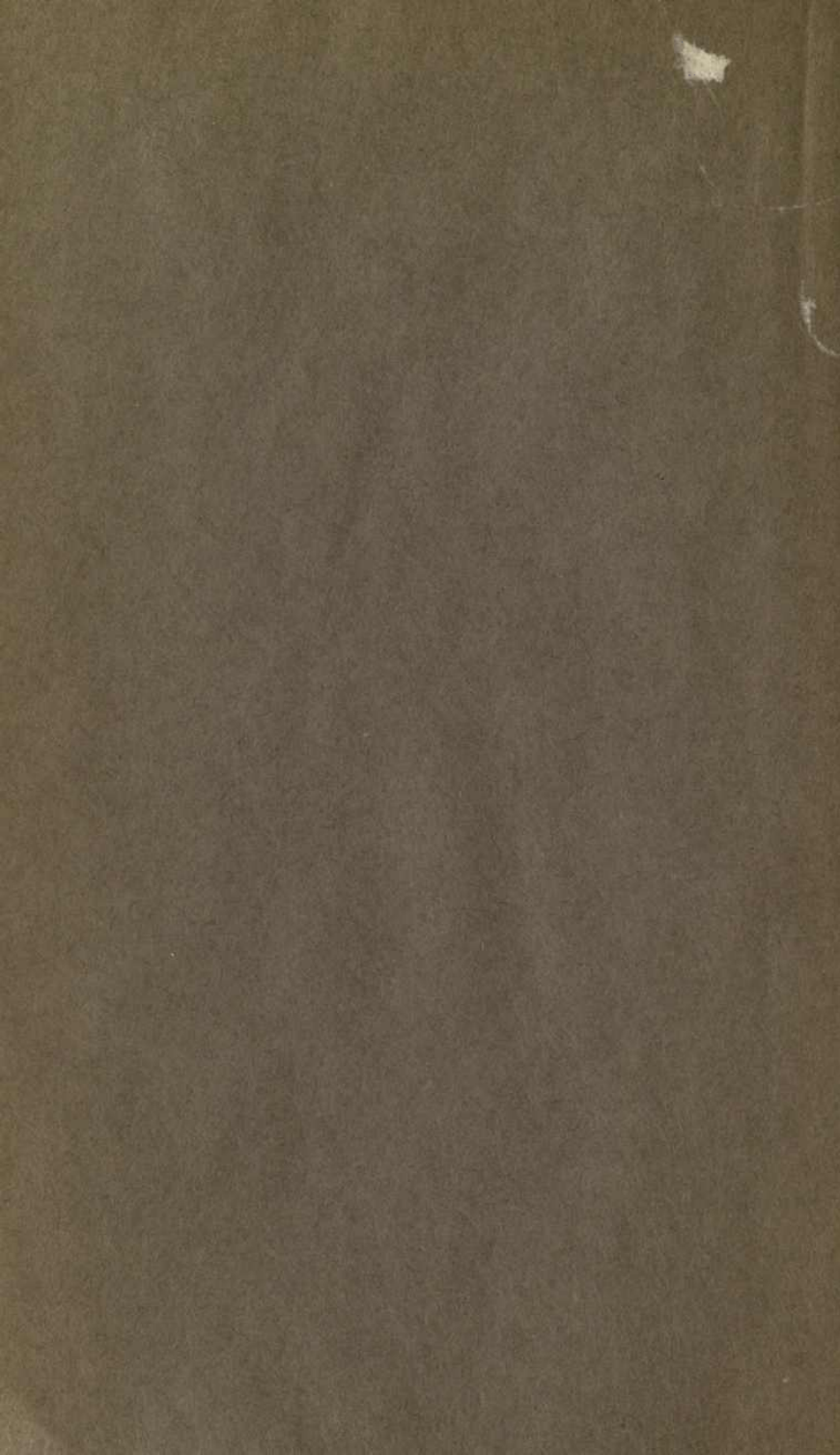
QC
453
W3
App.AA

UC-NRLF



⌘B 565 689





QC453
W³
App. AA

Watts, Wm M
Index of spectra
App. AA

KRYPTON.

(J. 121 Q 4)

- Ramsay and Travers, P.R.S. 1898 lxiii 405 ; Zs. phys. Chem. 1901 xxxviii 641.
 Runge, Nature 1898 lix 29 ; Artroph. J. 1899 x 73.
 Ramsay, Nature 1898 lix 53.
 Liveing and Dewar, P.R.S. 1901 lxviii 389
 Ladenburg and Krügel, Szb Berlin 1900 I. 211, II. 727.
 Schmidt, Verh. D. ph. Ges. 1906 viii 277.
 Lohmann, Ph. Zs. 1906 vii 809 (Z).
 Buisson and Fabry, C.R. 1913 clvi 945.
 Lewis, Artroph. J. 1916, xliii 68.

Runge 7601.47₄, 7587.48₃.

Liveing and Dewar 7600₈, 7587₂, 6771₁, 6578₁, 6542₃, 6511₂, 6487₃, 6458₁,
 6451₃, 6420₄, 6305₃, 6170₂, 6095₁, 6021₁, 5873₁, 5544₁, 5506₂,
 5483₁, 5429₁, 5305₁, 5215₁, 5209₅, 5172₁, 4903₂.

Buisson and Fabry 5870.9172 Z'', 5570.2908 Z''.

ULTRA-VIOLET SPECTRUM OF KRYPTON.

Baly (Q.p.20)	Lewis	Con- denser	+S.I.	Baly (Q.p.20)	Lewis	Con- denser	+S.I.
2464.87	2464.86	8		2442.68	2442.67	7	
59.74	59.68	7			40.11	5	
57.79	57.78	8		39.64			
56.16	56.18	8	4	39.32	39.33	8	
55.42	55.35	2		28.44	28.43	10	9
54.19	54.15	4		26.46	26.43	9	8
53.37	53.39	6		25.15	25.15	5	
52.38	52.43	6		20.30	20.31	10	2
46.56	46.54	8		18.13	18.26	10	2

948396

Intensity			Intensity			Intensity		
Lewis	Con- denser	+ S.I.	Lewis	Con- denser	+ S.I.	Lewis	Con- denser	+ S.I.
2416.90	3		2340.05	2		2263.71	2	
16.31	3		39.15	1		62.94	1	
15.06	9	3	36.75	1		60.72	2	
13.93	9	3	33.33	1		59.83	2	
12.11	3		32.28	1		55.10	3	
09.15	8	3	31.55	2		54.14	1	
08.59	7	3	30.35	1		53.47	1	
07.28	5		29.30	8		52.82	1	
06.42	6		28.21	1		51.96	2	
03.80	3		26.55	5		51.13	2	
03.14	3		24.85	3		50.22	3	
02.62	2		23.85	4		48.58	2	
01.66	1		22.40	2		47.19	1	
00.30	5		20.92	6		45.34	6	
2399.21	2		19.70	1		44.38	1	
98.38	10		19.01	1		44.09	1	
97.09	5		17.81	1		43.10	1	
94.90	1		16.29	10	4	37.07	5	
94.06	8		15.45	9	4	34.30	2	
92.92	7	3	14.21	8	3	33.76	1	
90.65	4		11.97	8		32.90	1	
89.62	2		09.42	1		32.26	1	
88.05	2		07.19	1		30.70	1	
87.23	1		05.33	1		27.96	6	
85.97	1		04.78	1		25.10	2	
84.80	1		04.37	1		21.87	1	
83.91	1		02.88	6		19.19	2	
82.99	1		01.69	8		18.26	1	
76.85	3		00.35	8		17.59	1	
75.68	10	6	2299.02	6		16.72	1	
73.81	6		97.98	1		16.08	1	
72.93	1		96.02	2		15.70	2	
71.60	8		92.45	1		13.05	3	
70.27	3		91.26	6		11.88	2	
69.25	4		90.30	1		06.6	2	
68.30	4		89.31	1		2197.4	2	
66.35	1		87.75	10	3	93.6	1	
65.80	5		85.61	2		92.1	2	
65.03	1		84.43	1		88.3	1	
63.74	1		82.92	10	3	86.8	1	
63.01	8		81.26	1		85.4	2	
62.18	4		80.54	1		79.3	1	
60.40	3		79.79	5		77.7	2	
58.80	3		77.50	7		73.7	1	
56.60	1		74.70	3		72.2	2	
55.65	1		73.63	3		70.8	2	
53.95	10	9	73.15	6		69.2	1	
53.12	2		72.68	1		66.1	1	
50.08	1		71.90	1		64.6	2	
48.27	1		70.59	2		62.7	2	
45.62	6		68.06	1		59.5	1	
44.55	8	5	67.03	1		55.6	1	
43.11	3		66.25	1		49.3	1	
41.97	1		65.70	1		45.9	1	
40.93	5		64.69	1				

LANTHANUM.

(A. 93 T. 71)

Lohse Astroph. J., 1897 vi 106.

Hartley and Ramage, Tr. R.S. Dublin 1901 vii 339 (Fl.).

Meyer, Zs. f. anorg. Chemie 1904 xli 97.

Hagenbach and Konen, Atlas der Emissions spectra, Jena 1905.

Bertram, Zs. w. Ph. 1906 iv. 16.

Humphreys, Astroph. J. 1907 xxvi 18 (Sh.).

Pollok and Leonard, P.R.S. Dublin 1908 xi. 257 (P.).

Eder and Valenta, Szb. Wien 1909 cxviii IIa 511, 1910 cxix IIa 39.547 :

Atlas typischer Spektren.

Rybar, Ph. Zs. 1911 xii 889 (Z).

Exner and Haschek, Die Spektren der Elemente.

Paulson, Astroph. J. 1914 xl 304.

Popov, A. P., 1914, xlv, 154.

Arc.		Spark.		Intensity	
Eder & Valenta	Exner & Haschek	Exner & Haschek	Eder & Valenta	Arc	Spark
7466					
34					
04					
7380					
7282					
7161					
48					
32					
17					
02					
7086					
69					
66.50			7066.50	4	2
64					
46.22				2	
6958.41			6958.41	1	2
25.54				1	
6838.18				1	
34.33				1	
24.06				1	
09.14				1	
6774.52	6774.52		6774.54	4	3
53.32	53.33			2	
48.45				1	
14.30			14.36	2	2
09.77	09.75		09.81	4	3
6693.16	6693.14			2	
71.69	71.7		6671.67	2n	2
61.63	61.64		61.56	3	1
51.10	51.12			3	
45.42				1	
44.66	44.7			2n	
43.03		6643.10	6643.05	2	2n
36.74				1	
16.80	16.86			3	

Arc.		Spark.		Intensity.	
Eder & Valenta	Exner & Haschek	Exner & Haschek	Eder & Valenta	Arc	Spark
6608.51	6608.55			3	
00.44	00.44			2	
6593.69	6593.75			3	
82.40				1	
78.73	78.79	6578.80	6578.75	5	5
71.23				1	
65.75	65.71			2	
55.31				1	
54.42				1	
43.40	43.40	43.40	43.44	6	3n
29.91				2	
27.20	27.21	27.24	27.16	6	6
20.94	20.95			1n	
20.23				1	
19.58				1	
06.38	06.45			2n	
6498.37	6498.43	6498.44	6498.37	3	3
			97.13	1	
93.09				1	
85.70	85.80			3	
68.69	68.7			2n	
56.21	56.24	56.26	56.20	6	4
54.73	54.78		54.75	5	2
50.55	50.59			2	
48.34	48.37			3	
46.85	46.85	46.85	46.94	3	3
43.25				2	
17.47				1	
11.20	11.24	11.25	11.24	10	4
6399.25	6399.24	6399.25	6399.25	4	3
94.45	94.46	94.45	94.43	9	6
90.78	90.70	90.69	90.80	9	7
74.31				2	
60.50	60.42			3	
58.4	58.33	58.38	58.44	4	2
56.66				1	
39.48				1	
38.11				2	
34.00				1	
30.68				1	
26.20	26.10		26.17	4	2
20.64	20.59	20.60	20.62	6	5
18.45	18.48			2	
16.03			16.08	2	
11.15	11.15	11.17	11.13	3	2
10.35	10.39			2	
09.11				1	
08.44				1	
07.43				2	
05.71	05.71			3	
6296.33	6296.32	6296.33	6296.31	6	5
93.85	93.81		93.84	3	1

Arc.		Spark.		Intensity.	
Eder & Valenta	Exner & Haschek	Exner & Haschek	Eder & Valenta	Arc.	Spark
6288.77	6288.8			2	
87.97	88.0			2	
74.04			6274.06	1	1
66.35	66.27		66.33	4	1
		6262.64			2
62.50	62.52''	62.50	62.52	9	6
50.17	50.14	50.14	50.18	9	6
38.75	38.82			2n	
36.97	37.04			1n	
36.35	36.48			2n	
35.04	35.10			2n	
33.67	33.75			2n	
19.50				1	
	18.40			1n	
08.44				1	
03.73	03.75		03.73	2n	1
6188.31	6188.30	6188.28	6188.29	2	3
74.43				1	
72.95	72.95	73.00	72.93	4	2n
65.90	65.99			3	
	62.47			1n	
46.75	46.77	46.80	46.76	3	1n
45.58	45.6			1n	
43.25	43.25			2n	
34.65	34.65			3n	
29.80	29.79	29.78	29.80	4	3
27.30	27.30			2	
26.29	26.31	26.32	26.32	4	3
11.95	11.96			3	
08.64	08.75			2	
07.50	07.53			2	
00.65	00.64	00.63	00.68	3	2
	6085.25			1n	
	69.00			1	
	67.40			1n	
6038.75	38.86			2	
07.59	07.62			1	
	5992.65			1n	
	82.63			1	
	76.00			1n	
5973.69	73.79	5973.80	5973.65	2	3
	71.35			1n	
	62.90			1	
	60.88			1n	
	48.6			1n	
36.40	36.50	36.47	36.37	3	2
35.53	35.57			2	
30.80	30.92		30.78	7	3
	28.77			1	
27.94	28.00	28.01	27.96	1	2
17.87	17.90			2	

Arc.		Spark.		Intensity.	
Eder & Valenta	Exner & Haschek	Exner & Haschek	Eder & Valenta	Arc	Spark
	5904.59			1	
5902.14	02.22	5902.24	5902.10	1	1
5895.06	5895.05			2	
90.19+Na	92.92			3	
80.80	80.90	5880.87	5880.77	4	3
	78.28			1	
	77.90			1	
74.92	75.00			1	
74.18	73.26			1	
63.91	63.95	63.97	5863.89	3	3
55.81	55.85			3	
	52.53			1	
48.57	48.63			2	
45.25	45.29			2	
	40.00			1n	
29.90	29.99			2	
	27.82			1n	
24.01	24.09			2	
22.20	22.23	22.20		3	1n
08.55	08.56	08.56		4	2
05.95	05.99	06.00		6	2
5797.79	5797.81	5797.83		8	4
91.52	91.58	91.57		8	2
89.41	89.47	89.50		8	2
70.15	70.21			2	
69.53	69.56	69.55		10	3
69.27	69.35	69.30		10	3
62.03	62.08	62.08		4	2n
44.58	44.67			3	2
	43.20			1n	
40.84	40.90	40.89		5	2
35.16	35.20			2	
27.51	27.53	27.52		2	1n
20.22	20.24			2	
	14.75			1n	
14.19	14.25			2	1
12.64	12.61	12.64		5	2
	11.00			1n	
03.50	03.49			2	2
	02.78			1n	
	01.35			1n	
	00.44			1	
	5699.60			1	
5696.38	96.42			3	2

Arc.		Spark.		Intensity.	
Eder & Valenta	Exner & Haschek	Exner & Haschek	Lohse	Arc	Spark
5671.78	5671.80	5671.78	5671.78	2	2
	61.64			1	
57.94	57.93		57.94	3	1
	56.81		(1)	1	
	55.04			1n	
48.46	48.46		48.50	5	2
			(1)		
39.51	39.53		38.91	2	1
			(1)		
32.23	32.24		32.34	2	1
31.45	31.43	31.45	31.47	3	2n
			(5)		
10.73			10.76	1	1
			(5)		
5588.55	5588.57		5588.58	2	2 _x
			(3)		
	70.60		70.71	1	1
			(1)		
68.66	68.70		68.67	2	2
67.12	67.16		67.16	2	1
65.92	65.95		65.79''	2	2
65.64	65.66		(2)	2	
	45.16				
41.45	41.50		41.46	1	1
35.91	35.88	35.84	35.90	5	1
	32.29		32.39	1n	1
	30.10		30.16	1	1
17.59	17.57		17.62	1	1
15.51	15.51		(1)	1	
06.19	06.25		06.21	1	1
04.03	04.05		04.04	2	1
	02.91			1	
	02.50			1	
01.56	01.59	01.61	01.56	7	2
			(2)		
5493.68	5493.68		5493.68	2	1
	91.30			1	
82.50	82.51		82.48	4	2
80.89	80.96		80.96	1	1
75.38	75.40		75.55	1	1
	67.16		(2)	1	
64.60	64.60	5464.57	64.57	3	1n
58.90	58.90		58.88	2	1
55.35	55.35	55.32	55.37	6	1 _x Chi

Arc.		Spark.		Intensity	
Wolff (T. p. 73)	Exner & Haschek	Exner & Haschek	Lohse	Arc	Spark
			(6)		
5382.104	5382.11	5382.10		3	2
81.187	81.19	81.19	5381.18	4	1
(1)	(1)				
77.214	77.30	77.30	77.35	3	3
(3)	(2)		(3)		
40.879	40.88	40.85	40.94	3	1
(4)	(4)		(2)		
03.727	03.72	03.70	03.69	4	1
02.813	02.83	02.81	02.79	5	1
02.159	02.16	02.11	02.09	6	1
5291.010	5291.02	5291.03	5291.01	4	1
(3)	(2)				
71.359	71.40	71.36	71.35	4	1
			(1)		
59.549	59.57	59.56	59.57	3	1
(5)	(4)	(1)	(1)		
34.445	34.46	34.44	34.56	5	1
(1)	(1)	(1)	(3)		
12.037	12.01	12.03	11.96	8	1
(1)	(1)	(1)	(1)		
5188.374	5188.40	5188.42	5188.59	2	3
(1)					
83.584	83.60	83.58	83.59	8	5
(1)					
77.471	77.48	77.49	77.47	6	1
(4)	(2)		(2)		
63.787	63.77	63.75	63.76	3	1
58.863	58.83			5	
57.612	57.58	57.56	57.65	3	1
56.910	56.89	56.89	56.91	3	1
45.594	45.59	45.60	45.64	4	1
(1)					
23.160	23.12	23.13	23.14	4	3
(1)	(1)				
14.732	14.70	14.72	14.71	4	3
(1)					
06.414	06.40	06.43	06.57	4	1n
(16)	(9)	(1)			
4999.641	4999.67	4999.61	4999.66	5	3
(3)	(2)	(1)	(1)		
91.436	91.47	91.46	91.49	4	2
86.989	87.00	87.00	87.03	6	2
(2)	(1)				Zvii
70.552	70.55	70.55	70.53	5	2
(4)	(1)	(1)	(2)		
49.940	49.94	49.97	50.04	5	1
46.602	46.60	46.59	46.54	5	1
(2)	(1)				Zvii
34.999	35.00	35.00	35.06	4	1
(1)	(1)				
21.952	21.99	21.99	22.00	8	5
21.129	21.17	21.18	21.14	8	5 _x
(3)	(2)				
00.085	00.10	00.08		5	4
(6)	(3)				
4861.062	4861.09	4861.09	4861.10	5	3
(7)	(7)	(5)			

Arc.		Spark.		Intensity.	
Wolff (T. 73)	Exner & Haschek	Exner & Haschek	Lohse	Arc	Spark
4827.031	4827.06	4827.05	(2)	3	1 Ziv
24.220	24.24	24.25	24.26	5	4
(1)	(1)				
09.182	09.14	09.14	09.18	4	3
04.218	04.22	04.19	04.21	4	3
(10)	(8)	(1)	(1)		
4767.085	4767.07	4767.10	4767.09	6	1
(9)	(5)				
48.897	48.90	48.92	48.96	5	5
43.255	43.26	43.25	43.27	8	10 Zx
(1)					
40.433	40.48	40.44	40.47	8	5
(4)	(2)				
28.555	28.60	28.59	28.61	5	3
24.565	24.60	24.60	24.59	5	1
(2)					
20.081	20.10	20.09	20.08	5	2
(2)	(1)	(1)	(1)		
16.594	16.61	16.62	16.69	3	3 Zix
(2)	(1)				
13.081	13.10	13.10	13.09	8	1 Zix
(1)					
03.446	03.48	03.42	03.46	3	4
(1)	(2)				
4699.796	4699.80	4699.80	4699.79	2	2n
92.681	92.67	92.62	92.66	4	5 Zx
91.344	91.34	91.32	91.37	4	1 Zv
	(1)	(2)	(5)		
72.005	71.98	71.98	72.00	3	5
69.097	69.08	69.05	69.13	4	8 Zix
63.972	63.92	63.90	63.98	4	8 Ziv
62.718	62.69	62.69	62.77	5	4
(1)	(1)	(1)	(1)		
55.714	55.66	55.59	55.68	5	10 Ziv
(1)		(2)	(1)		
50.528	50.51	50.50	49.15	2	1n Ziv
	(2)				
48.844	48.82	48.85		3	1n Ziv
47.673	47.66	47.63	47.72	2	2 Zix
(1)	(1)				
45.488	45.43	45.44	45.47	3	2 Ziv
	(1)		(1)		
36.603	36.60	36.59	36.59	1	2 Ziv
		(1)	(4)		
20.059	20.03	20.01	20.00	4	6
15.240	15.25			2n	
13.576	13.54	13.59	13.56	5	5 Ziv
05.962	05.95	05.99	05.93	3	3 Zvi
(5)	(5)		(6)		
4580.249	4580.22	4580.23	4580.28	3	3
75.073	75.02	75.00	75.07	8	4 Zxii
			(1)		
71.144	71.15	71.14	71.23	2n	1 Ziv
70.210	70.20	70.19	70.19	5	1
68.095	68.08	68.07	68.08	5	1
	(1)		(3)		
59.467	59.46	59.50	59.52	4	3
(1)					

Arc.		Spark.		Intensity.	
Wolff (T 73)	Exner & Haschek	Exner & Haschek	Lohse	Arc	Spark
4558.650 (1)	4558.62 (1)	4558.61	4558.63	7	2
50.948 (1)	50.95 (1)		(4)	2n	Ziv
49.682 (2)	49.65 (2)	49.66 (2)	49.72 (4)	5	1
26.287	26.27	26.30	26.31	6	8
25.480	25.44	25.48	25.45	3	8 Zx
22.550 (3)	22.55 (4)	22.54 (3)	22.61 (9)	8	12 _x
4494.869 (5)	4494.86 (5)	4494.84	4494.83	2	1n Ziv
74.716 (2)	74.73 (1)	(3)	(12)	2n	Zvii
55.985 (2)	55.95 (1)	55.98	55.97	3	2 Ziv
52.338 (3)	52.34 (1)	52.32	52.31 (4)	5	1
42.839 (2)	42.85		42.85	3	1
36.013	36.02	36.00	35.91	3n	1 Zix
33.121		33.10	33.18 (3)	4	2 Zviii
30.064	30.09	30.04	30.06	10	10 Zix
27.750	27.72	27.73	27.84	6n	8
24.080	24.06	24.05	24.12	4	1
		23.30	23.34		1n Ziv
19.328 (10)	19.32 (4)	19.30 (3)	19.33 (11)	3	2 Ziv
4385.380 (2)	4385.35 83.62 (1)	4385.35 83.62	4385.39 83.70 (2)	4 3	2 6 Zix
78.280 (1)	78.26	78.24	78.29 (4)	7n	3 Ziv
64.845 (5)	64.81 (5)	64.83 (1)	64.84 (3)	6	3
54.570 (4)	54.56 (4)	54.54 (2)	54.52 (3)	7	6
35.135	35.13	35.15	35.13	5	5
33.933	33.98	33.97	33.98 (1)	15	13 Ziv
22.673	22.69	22.69	22.68 (1)	6	5
16.068	16.07	16.04	16.08	2	2 Zix
11.902 (2)	11.90 (1)	(1)	(2)	2n	Ziv
00.606	00.59	00.59	00.61	3	3 Zxi
4296.213	4296.23	4296.21	4296.24 (2)	8	8
87.137	87.10	87.09	87.15	10	20
80.429	80.43	80.44	80.46	5	1
75.802	75.81	75.80	75.83	3	4 Zvii
69.662	69.64	69.65	(1)	6	10
63.750 (2)	63.75 (2)	63.73	63.74 (3)	4	8
50.170	50.14	50.17	50.15 (2)	2	5 Zx

Arc.		Spark.		Intensity.	
Wolff (T. 73)	Exner & Haschek	Exner & Haschek	Lohse	Arc.	Spark
4238.558	4238.55	4238.57	4238.54	20	10 Zx
31.122	31.11	31.10	31.13	2	6 Zx
			(2)		
17.716	17.70	17.70	17.85	4	10
			(2)		
04.195	04.18	04.23	04.20	5	4
4196.710	4196.70	4196.74	4196.70	10	10 Zxii
		(1)			
92.507	92.49	92.50	92.50	6	8
			(1)		
87.472	87.47	87.49	87.41	6	1
		(3)	(9)		
(7)	(7)				
52.915	52.94	52.97	52.92	3	5 Zx
52.108	52.14	52.17	52.12	6	9 Zvi
	(1)		(1)		
41.871	41.92	41.90	41.88	5	10
(1)	(1)	(3)	(4)		
23.379	23.38	23.39	23.38	10	30
(4)	(4)	(2)	(4)		
4099.695	4099.70	4099.71	4099.69	3	10
(1)	(1)	(1)	(1)		
86.866	86.86	86.90	86.87	10	20 Ziv
(1)	(1)	(1)	(1)		
77.487	77.50	77.51	77.49	10	12 Zix
76.853	76.87	76.89	76.97	2	2 Zix
67.547	67.56	67.52	67.54	4	8
(3)	(3)	(4)	(4)		
50.241	50.24	50.25	50.25	5	10
			(1)		
43.066	43.04	43.18	43.07	3	20
(2)	(1)	(3)	(2)		
31.848	31.85	31.86	31.81	4	20
(3)	(3)	(5)	(4)		
3995.911	3995.90	3995.91	3995.90	10	5 Ziv
		94.67			2n Ziv
88.668	88.69	88.66	88.67	15	30x Ziv
		81.55			1n Ziv
(1)	(1)	(4)	(4)		
49.240	49.27	49.22	49.21	20	50ψ
			(2)		
36.367	36.35	36.40	36.32	6	3 Zviii
29.359	29.34	29.40	29.33	6	15
(1)	(1)	(1)	(2)		
21.684	21.69	21.71	21.69	8	10 Zix
	(1)		(1)		
16.186	16.16	16.21	16.17	7	10 Zvi
(4)	(3)		(5)		
3886.464	3886.50	3886.51	3886.47	8	15
			(9)		
71.764	71.80	71.89	71.80	8	20
			(37)		
49.167	49.14	49.20	49.15	8	10
	46.15	46.15	46.15	2	2 Ziv
	(4)		(7)		
3794.916	3794.90	3794.99	3794.94	10	50
			(1)		

Arc.		Spark.		Intensity.	
Wolff (T 73)	Exner & Haschek	Exner & Haschek	Lohse	Arc	Spark
3790.967	3790.99	3791.02	3790.99	8	50
		(1)			
84.945	84.95	84.95	(6)	2	2 Ziv
(1)	(1)	(8)			
59.227	59.22	59.33	59.26	8	2 Ziv
		(1)	(3)		
35.988		36.6	37.09	3	2 Ziv
		(2)			
25.199	25.21	25.24		1	3 Zix
(1)					
15.675	15.66	15.67	15.66	3	4 Zx
(1)	(1)	(1)	(1)		
13.696	13.69	13.71	13.69	4	6 Zix
(5)	(3)	(5)			
3662.220	3662.24	3662.24	(2)	2	3 Zx
		(1)			
50.328	50.38	50.31	3650.30	3	4 Zx
(1)	(1)	(1)			
45.561	45.58	45.57	45.55	5	8
(4)		(3)			
21.893		21.96	(3)	1n	1 Zv
		(12)			
			(11)		
(18)	(12)	3517.26	3517.26		50
3513.064	3513.07	13.06	13.06	2	1 Zvi
(3)	(3)	(1)	(1)		
3453.311	3453.30	3453.32	3453.30	3	2 Zx
(6)	(5)	(2)	(2)		
3381.024	3381.10	3381.10	3381.04	8	10 Zix
(4)	(3)	(1)			
44.682	44.74	44.71		8	8
(1)	(1)				
37.611	37.66	37.67		8	15
(1)	(1)	(1)			
03.239	03.29	03.26		5	5 Zvi
3265.792	3265.81	3265.79		5	4 Zx
49.483	49.50	49.49		4	3 Zvii
(1)	(1)				
45.248	45.26	45.28		5	4
(2)					
3193.130	3193.09	3193.09		2	1 Zvii
(5)	(3)	71.79			20ψ
42.880	42.91	42.99		2	1 Zx
(2)	(2)				
04.702	04.70	04.76		3	1 Zvii
(13)	(1)	(5)			
2808.468	2808.48	2808.46		6	3x
		(7)			
(5)	(1)	2651.78			8
2610.428	2610.43	10.46		2	5x
(1)		(4)			
		2476.80			8x
		(2)			
		2379.49			10ψ
		(3)			
		2297.90			8
		(2)			

BAND-SPECTRUM OF LANTHANUM.

Arc.			Spark.		Intensity
Eder & Valenta	Kellner	Wolff	Hagenbach & Konen	Hartley & Ramage	
7497					1 bv
85					1 bv
65					1 bv
44					1 bv
34					1 bv
14					1 bv
04					2 bv
7380					1 bv
7194					1 bv
79					1 bv
61					2 bv
48					1 bv
32					2 bv
17					2 bv
01					2 bv
7086					2 bv
71					3 bv
69					3 bv
55					3 bv
41					3 bv
24					3 bv
22					2 bv
6995					2 bv
			6062		
			35		
			06		
			5977		
			49		
			20		
5866				5710	
			5680	5682	
			52	54	
5628.8		5628.8	28	29	bv
5626.3		26.3			bv
5602.6		02.6	00	02	bv
5600.2		00.2			bv
				5517	
				5486	
			5471	71	
			54		
			31	35	
			06	09	
5380.21		5380	5380	5382	bv

Arc.			Spark.		Intensity
Eder & Valenta	Kellner	Wolff	Hagenbach & Konen	Hartley & Ramage	
		4464.4		4463	
	4458.715	58.7		58	
	53.371	53.4		53	
	48.221	48.2		47	
	43.175	43.2		42	
	38.186	38.2		37	bv
	38.066				
	31.111	33.4		32	bv
	28.27	28.2		27	bv
	28.151				
	23.333	23.3		22	bv
	23.208				
4418.4	18.406	18.4	4418	4418	bv
	18.279				
		4409.9			
	4404.937	04.9			bv
	00.246	00.2			
	00.037				bv
	4395.896	4395.9			
	95.800				bv
	91.770	91.8			
	91.667				bv
	87.761	87.7			
	87.651				bv
	83.724	83.7			
	—				bv
	79.896	79.9		4379	
	79.795				bv
	—	76.0			
	75.909				bv
4372.1	72.141	72.1	4372	4371	bv
—	72.011				

LEAD.

(A.96 F.15 G.54).

- Demarçay, Spectres électriques, Paris 1895 (Sp.).
 Humphreys, Astroph. J. 1897 vi. 169 (Sh.).
 Huff, Astroph. J., 1902, xvi. 27 (Arc.).
 Hartmann, Astroph. J. 1903, xvii 270 (Arc. Sp.).
 de Wetteville, Ph.Tr. 1904 cciv. 139 (Fl.).
 King, Astroph. J. 1905 xxi, 236 (Arc.).
 Nutting, Astroph. J. 1906, xxiii, 64 (Str.).
 de Gramont, C.R. 1907 cxliv. 1101; cxlv. 231.
 Purvis, P. Ph.Soc. Camb. 1905 xiii 82; 1907 xiv 216 (Z).
 Hartley, Tr. R.S. Dublin, 1908, ix 85 (Fl.).
 Royds, Ph.Tr. 1908, ccviii 333 (Sp.); P.M. 1910 xix 285.
 Milner, Ph.Tr. 1908, ccix 71 (Sp.).
 Eder and Valenta, Beiträge 1904 p.399, Szb. Wien 1909, cxviii IIa 511,
 1077: 1910 cxix IIa 519: Atlas typischer Spektren.
 Janicki, A.P., 1909, xxix 833 (Str.).
 Luneland, A.P., 1911 xxxiv 505.
 Randall, Astroph. J., 1911, xxxiv. 1.
 Harnack, Zs. w. Ph. 1911 x. 281.313.
 Lehmann, A.P. 1912 xxxix 53.
 Pollok, P.R.S. Dublin, 1912, xiii, 253.
 Morren, P.R.S. Dublin, 1912 xiii, 269.
 Klein, Zs. w. Ph. 1913, xii 16.
 Eder, Zs. w. Ph. 1913, xiii. 20.
 Huppers, Zs. w. Ph. 1913, xiii. 46.
 Arnolds, Zs. w. Ph. 1914, xiii 313.
 Hasbach, Zs. w. Ph. 1914, xiii 412.
 Quincke, Zs. w. Ph. 1915 xiv, 259.
 Saunders, Astroph. J., 1916, xliii 240 (arc. I.A. in vacuo).
 Josewski, Zs. w. Ph. 1917 xvii 79.

INFRA-RED ARC, LEAD.

- Randall, 15315.6₃₀, 14744.4₃₀,
 Lehmann, 14853₃, 14171₄, 13510₂, 13100₁, 13101.9₄₀.
 R., 12563.8₄₀, 10971.5₃₀, 10888.6, 10650.8₆₀, 10501.3₁₅₀.
 L., 12547₂, 10961.7₄, 10641.8₃, 10489.8₂.
 R., 10292.9₁₀₀.
 L., 10279.9₂, 8267.2₃, 7228.6₁.

Arc.			Spark.			Intensity	
Eder & Valenta	Exner & Haschek	Klein I.A.	Eder & Valenta	Exner & Haschek	Klein I.A.	Arc	Sp.
7229.30 6878.67 6791.34		7228.974	6793 6660.28 6380.14	6660.38	6793 6660.04	6n 1n 1n	1 10 2
6235.73 6169.66 11.32 6060.07 12.36 02.20* 5896.18+	6002.3 Na	6235.317 6110.57 6059.427 11.76 01.957 5895.68	6002.10 5895.71 76.67 57.67		5896	3 2n 2 3 3 8	1 1 2 3
5692.36 09.14	5609.0		5609.14 5545.02 44.51	5609.00 5544.8	5608.8 5545.1	1	15 8 1
Kayser & Runge (F.15)	5422.9		5372.70 5207.15 01.70 5163.78 5043.14	5372.6	5372.5	1b	10 1 2 1 2n 1b 1b
5201.65	5201.63	5201.467		5201.65	5201.47	3	2 1 2n 1b 1b
5005.62	5005.63F	5005.441		5045 43 5005.65	5045 43 05.46	7	2

*—Kayser and Runge 6002.08.

Arc.			Spark
Kayser and Runge (F.15)	Exner and Haschek	Klein I.A.	Eder and Valenta
			4802.1 4798.2 60.98 4630.4 4571.72 4447.09 00.98 4387.04 4272.64
4340.65	4340.70	4340.432	
4168.21 4062.30 57.97 19.77	4168.19 Fl. 4062.31 Fl. 58.00 Fl. 19.80 Fl.	4168.045 4062.149 57.826† 19.644	
3740.10		3739.947 Fl.	
3683.60	3683.62	3683.471 Fl.	
71.65	71.80	71.506 Fl.	
39.71	*39.72	39.583 Fl.	
3572.88 3262.47 40.31 20.68	3572.95 3262.5 40.35 20.75	3572.737 Fl. 3262.353 40.195 20.544	

Fl.—Flame-lines. de Wetteville.

†—Quincke (I.A.) 4057.83, Frings (I.A.), 4057.831, Hasbach (I.A.) 4057.827.

*—Arnolds 3639.785.

Spark (cont.)			Intensity	
Exner and Haschek	Klein I.A.	Lohse	Arc	Spark
	4802.09			2
	4798.4			2
	61.0			3
				1
				2
				1
	4400.84			3
4387.11"	4386			20 Ziii
			1n	
4272.7	4272.55			2n
45.42"	45.1			6 Ziii
42.80	42.47			3
4182.4	4182.18			1n
68.20	68.042		12	3
4062.30	4062.146		12	3 Ziii
58.00	57.826		50r	10r Ziii
(2)	(1)			
19.76	19.639	4019.80	12	3
(3)	(3)	(5)		
3854.11	3854.05	3854.21		3n
(4)	(4)	(4)		
3740.28	3739.950	3740.14	20r	4r Ziv
(3)	(3)	(1)		
3683.64	3683.474	3683.75	25r	6r Ziii
		(1)		
71.72	71.507	71.66	12r	3 Ziii
(1)	(1)			
39.72	39.580	39.82	25r	6r Ziii
	(1)	(1)		
3573.03	3572.741	3572.91	20r	5r Ziii
	(2) 3262.37		2n	1n
(4)	(1)	(1)	2n	1n
3220.7	20.546		3n	1n
3176.62	3176.54			3n

"—Observed by Eder and Valenta in the *arc* between metallic poles.

Arc.			
Kayser and Runge (F.15)	Exner and Haschek	Klein I.A.	Huppers I.A.
3150.9	3151		
19.09	19.2	3118.917	3119.09 17.14 05.78 3089.38 63.84 43.84
2980.29		2980.162	2980.22
26.84	2927.0		
2873.40	*2873.48 Fl.	(3) 2873.324	2877.77 73.36
33.17	*33.21 Fl.	33.071	33.11
23.28	23.31 Fl.	23.199	23.19 16.66 01.98
02.09	*02.10 Fl.	†02.009	
2712.62			
2697.72	2697.8	2697.527	2697.54
63.26	63.27 Fl.	63.173	63.12
57.16	57.18	57.104	57.03
50.77	50.5	50.4	50.5
28.36	28.50 Fl.	28.293	28.27
14.26	14.26 Fl.	†14.200	14.11
13.74	13.77	13.678	13.68
2577.35	*2577.39 Fl.	2577.278	2577.30
	36.7		03.36
2476.48	2476.51 Fl.	2476.390	2476.40
46.28	46.30 Fl.	46.196	46.26
43.92	43.92 Fl.	43.840	43.91
28.71	28.80	28.631	28.66
11.80	11.86 Fl.	11.742	11.76

*—Arnold (I.A.) 2873.316, 2833.066, 2663.160; Frings (I.A.), 2833.071, 2802.004, 2663.163, 2577.283; Hasbach (I.A.), 2833.06.
 Fl.—Flame-lines. de Watteville. †—Josewski (I.A.), 2802.013, 2614.206.

Spark.			Intensity.	
Eder and Valenta	Exner and Haschek	Klein I.A.	Arc	Spark
	3137.91		2n	10
			1n	
			1	
			1	
	3089.21	3089.10	1n	2
	87.15	87.05		1
	44.00	3043.89	1	3n
	31.8	31.6		1n
	17.5	17.3		16
	2949.5		2	26
			1b	
			1n	
	2873.42	2873.326	12r	3r Ziv
	64.5	64.394		1nr
	33.13	33.072	25r	8r Ziia
	23.29	23.199	12r	6r Zvi
	02.10	02.011	15r	10r Zvi
2717.36	2717.2	2717.2		4
10.18			2	1
2697.69	2697.6	2697.61	5r	3
63.27	63.22	63.170	6r	6r
57.24	57.17	57.106	2	2
50.71	50.4	50.4	8b	2n
28.43	28.47	28.296	2	4
14.29	14.29	14.204	10r	8r
13.83	13.79	13.686	6r	2r
00.10				1
2591.04				$\frac{1}{2}$
77.40	2577.40	2577.279	12r	3r
68.52	68.54	68.43		1
62.44	62.39	62.308		4
			3n	
			1n	
2478.72		2478.594		2
76.49	2476.49	76.390	10r	3r
46.34	46.46	46.199	12r	2
45.64		45.542		2
43.94	44.10	43.85	10r	2
33.70		33.599		2
28.78	28.82	28.644	5	4n
24.2				$\frac{1}{2}$
18.6				$\frac{1}{2}$
16.0				$\frac{1}{2}$
11.82	11.85	11.743	6r	2n

Arc.				
Kayser & Runge (F.15)	Exner & Haschek	Klein I.A.	Huppers I.A.	Saunders I.A. in vacuo
2402.04	2402.06 Fl.	2401.943	2402.01	2402.62
2399.69	2399.70	2399.598	2399.63	2400.17
93.89	93.93 Fl.	93.802	93.82†	2394.52
			89.69	
88.89	89.0	88.809	88.84	89.34
32.54	32.72	32.423	32.49	32.97
(1)				
2254.02		2253.94		2254.68
47.00	2247.03 Fl.	46.891	2246.97	47.53
		42.606		
37.52	37.55	37.427	37.41	38.03
		18.08		
03.57		03.52	03.46	04.18
		2189.606		2190.08
		(1)		
2175.88		2175.565		76.23
70.07		2170.00		70.60
		59.56		
15.1		15.04		15.63
12.0		11.76		12.37
2088.5		2088.23		
				2053.83
				22.64
				1904.88
				1868.59
				22.06
				1796.53
				26.71
				1682.54

†—Frings (I.A.) 2393.820.

Fl.—Flame-lines. de Watteville.

Spark.				Intensity.	
Eder & Valenta	Exner & Haschek	Klein I.A.	Eder I.A.	Arc	Spark
2402.06	2402.18	2401.942	2401.95	7r	4r
2399.71	2399.70	2399.598	2399.60	4	2
93.93	93.90	93.812	93.81	14r	5r
				1n	
	89.0	88.808	88.83	2n	1n
32.53	32.63	32.45	32.46	5r	4
17.39					$\frac{1}{2}$
00.28					1
2296.82					3
53.98		2253.93		4r	2
46.89	2247.00	46.90	2246.94	6r	3r
42.54		42.607		2	2
37.43	37.7	37.44	37.46	3r	3r
18.17				3	1
03.68	03.68	03.53	03.56	6	4r
2192.37					1
		2189.61Bi?		1	2
89.70					
69.96	2170.11	2170.00	2169.97	4r	
				6r	3r
15.14				3r	
				5r	1
				4	
2088.60				5r	1
60.36					$\frac{1}{2}$
				2	
				0	
				1	
				0	
				8	
				3	
				1	
				0	

Kayser and Runge have pointed out certain regularities in the spectrum of Lead. The lines shown in the first column of the following table have oscillation-frequencies less by 10807.43—than those of the corresponding lines in the second column, and less by 13638.60 than those of the lines in the third column.

4168.045	2873.322	2657.101
4019.644	2802.010	—
3739.947	2663.168	2476.384
3671.506	2628.279	2446.188
3572.737	2577.271	2401.944
3262.353	2411.739	2257.53
3240.195	2399.607	2246.900
3220.544	2388.811	2237.432
3118.917	2332.436	2187.90
2980.162	2253.95	

BAND SPECTRUM OF LEAD.

(A.174 G.54)

Vogel, Zs. f. anorgan. Chemic. 1894, v.42.

Jones, A.P. 1897 lxii 30.

Stark and Küch, Phys. Zs. 1905, vi 438.

Hagenbach and Konen, Atlas der Emissions spektra, 1905.

Gallenkamp, Zs. w. Ph. 1907, v. 299.

Auerbach, Zs. w. Ph. 1909 vii 30, 41.

Lamprecht, Zs. w. Ph. 1911 x. 16.33.

Eder and Valenta, Atlas typischer Spektren 1911.

Series	Hagenbach & Konen	Eder & Valenta	Lamprecht	Series	Hagenbach & Konen	Eder & Valenta	Lamprecht
		6720		IX		5026	5027.2 2 b
		6680		V	4986	4986	4985.7 3 b
		20		VIII		58	57.2 2 b
		6522		I		16	15.5 2 b
		6476		IX	4851	4851	4850.7 2 b
		28		V	17	19	17.5 3 b
		6344		VIII		4783	4785.8 4 b
		6288		I	4750	51	51.6 1 b
		6210		III	06	07	05.4 2 b
		6250		—		4694	
		6159		V	4659	60	4658.8 4 b
		6021		II		52	51.6 1 b
		5998		—		32	
VII	5911	11	5911.4 2 bv	—		19	
		5858		I		—	4598.1
IX			5842.9 1 bv	III	4553	4556	54.2 4 b
V			5772.5 1 bv	V	08	11	09.2 3 b
VII	5678	5678	5678.5 5 bv	II		—	4497.9 2 b
IX		18	17.5 5 bv	I	4454	4456	54.6 3 b
V		5554	5553.9 2 bv	III	10	12	11.0 4 b
VIII			36.3 1 bv	V		—	4396.6 1 b
I		5481	5480.7 1 bv	II		4354	58.5 2 b
VII	5461	61	61.5 5 bv	I	4318	17	17.4 4 b
IX	08	10	08.2 4 bv	VI		4290	4281.4 1 b
V		5353	5352.0 3 bv	III		—	74.6
VIII	5333	33	32.8 4 bv	II	4230	29	4229.0 4 b
I		5287	5281.0 2 bv	I		4183	4186.9
VII	5258	60	58.7 3 bv	VI	4158	57	56.5 2 b
IX		19	14.4 3 bv	III	4416	46	46.4 3 b
V	5164	5167	5165.0 3 bv	II		05	05.5 2 b
VIII	39	40	38.7 3 bv	IV		4070	4070.9 2 b
I			5093.4 1 bv	I		—	63.9 2 b
VII			67.6 2 bv	VI	4058	37	57.80 2 b
				III		—	27.2 2 b

Series	Hagenbach & Konen	Eder & Valenta	Lamprecht	
V			3992.9	1 bv
II		3988	88.2	2 bv
		82		
IV		56	55.1	2 bv
I			50.8	1 bv
III			13.1	1 bv
V		3880	3882.4	1 bv
II			78.5	1 bv
I			39.8	1 bv
III		05	05.1	1 bv
II			3772.0	1 bv
		3748		
I			36.5	1 bv
		3557		
		3491		
		02		
		3342		
		22		
		3264		

The bands, of which the "edges" only (all bv.) are given above, have an extremely complicated fine-line structure, according to Lamprecht, their oscillation frequencies can be calculated with considerable accuracy by the Deslandres formula, $O.F. = A. + Bm^2$.

Series I. (76 lines measured)

m	λ	
0	(5679.533)	
15	5682.762	
16	83.238	
17	83.775	O.F. = 17607.08—0.046168m ²
18	84.327	
19	84.900	(m = 15.16 75.76)
&c	&c	
75	5800.000	
76	5802.768	

Series Ia.

m	λ	
0	(5678.676)	(29 lines measured)
17	5682.762	
18	83.238	O.F. = 17609.74—0.043813m ²
19	83.775	
20	84.327	(m = 17.18 28.29)
21	84.900	
&c	&c	
28	5706.173	
29	07.431	

Series II.	(50 lines measured)	
m	λ	
0	(5680.217)	
44	5708.568	
45	09.900	O.F. = 17604.96—0.045168m ²
46	11.213	
47	12.596	(m = 44.45 92.93)
48	14.002	
&c	&c	
92	5806.362	
93	09.213	

Series III.	(64 lines measured)	
m	λ	
0	(5679.350)	
22	5686.423	
23	87.087	O.F. = 17607.65—0.0452452m ²
24	87.772	
25	88.504	(m = 22.23 84.85)
26	89.262	
&c	&c	
84	5784.279	
85	86.841	

Series IV.	(29 lines measured)	
m	λ	
0	(5681.495)	
57	5729.890	
58	31.675	O.F. = 17601.00—0.04582m ²
59	33.453	
60	35.238	(m = 57.58 87.88)
61	37.071	
&c	&c	
88	5798.390	

Series V.	(8 lines measured)	
m	λ	
0	(5679.666)	
29	5691.942	O.F. = 17606.67—0.0451515m ²
33	5695.571	
38	5700.797	(m = 29.30 58.59)
&c	&c	
59	5730.822	

Series VI.	(10 lines measured)	
m	λ	
0	(5678.492)	
1	5690.297	O.F. = 17610.31—0.043434m ²
5	93.832	
8	96.700	(m = 29.30 65.66)
&c		
66	5740.162	

Series VII.	(75 lines measured)	
m	λ	
0	()	
20	5468.376	
21	68.991	
22	69.665	O.F. = 18306.37—0.0485205m ²
23	70.327	
42	71.071	(m = 20.21 103.104)
&c	&c	
103	5620.563	
104	23.799	

Series VII A		(41 lines measured)
m	λ	
0	()	
22	5468.376	
23	68.991	O.F. = 18309.33—0.0462143m ²
24	69.665	
25	70.327	(m = 22.23 61.62)
26	71.071	
&c		
61	5513.464	
62	15.209	

Series VIII		(96 lines measured)
m	λ	
0	()	
30	5476.261	
31	77.215	O.F. = 18304.81—0.048082m ²
32	78.119	
33	79.060	(m = 30.31 119.120)
34	80.037	
&c		
119	5674.107	
120	77.818	

Series VIIIA		(49 lines measured)
m	λ	
0	()	
24	5469.998	
25	70.761	
26	71.412	
27	72.128	
28	72.929	
&c.		
71	5532.473	
72	34.505	

LEAD CHLORIDE.

Mitscherlich, A.P. 1864, cxxi 459.

Diacon, A.C.P. 1865 vi 5.

Leeds, Q. Journ. Sci. 1871 viii 59.

Jones, A.P. 1897 lxii 30.

Wiedemann, 1904 Festschr. f. Boltzmann 826.

Harnack, Zs. w. Ph. 1911 x 281.313.

Hertenstein, Zs.w.Ph. 1912 xi 119.

LEAD IODIDE.

Wiedemann, 1904, Festschr. f. Boltzmann.

LITHIUM.

(A.99 D.1 F.9 M74 O.30)

- Lewis, *Astroph. J.*, 1895, ii. 106.
- Rummel, P.R.S. Victoria, 1896 ix. 260, 1897 x 75.
- Michelson, P.M. 1897 xliv 109; *Astroph. J.* 1898 vii 131; *Nature* 1899 lix 440. (Z).
- Fabry and Perot, *J. de Phys.* 1900 ix 369; C.R. 1900 cxxx 492.
Astroph. J. 1902 xv. 73, 261.
- Sutherland, P.M. 1901 ii. 245.
- Ramage, P.R.S. 1901 lxxi; 1903 lxxi 164, C.N. 1904 lxxxix 253.
- Runge and Paschen, *Astroph. J.* 1902, xvi 123.
- Hagenbach, A.P. 1902 ix 729.
- Konen and Hagenbach, *Ph. Zs.* 1903 iv. 800.
- Ritz, *Ph. Zs.* 1903 iv. 406; 1908 ix 521.
- Fowler and Shaw, *Astroph. J.* 1903 xviii 21.
- de Wetteville, C.R. 1903, cxxxv 1329; 1904 cxxxviii, 346; *Ph. Tr.* 1905 cciv. 139.
- Lehmann, A.P., 1901 v. 633; *Zs. w. Ph.* 1903 i. 135.
- Morse, *Astroph. J.* 1904 xix 162; 1905 xxi 233.
- Saunders, *Astroph. J.* 1904 xx 188.
- Nutting, *Astroph. J.* 1906 xxiii 64.
- Fredenhagen, *Ph. Zs.* 1908, viii 404, 729, 927.
- Bergmann, *Zs. w. Ph.* 1908 vi 113.
- Humphreys, *Astroph. J.* 1907 xxvi 18.
- Goldstein, *Astroph. J.* 1908 xxvii 25; A.P. 1908 xxvii 773.
- Paschen, A.P. 1908 xxvii 537.
- Riecke, *Ph. Zs.* 1908 ix 241.
- Coblentz, *Ph. Zs.* 1908 ix 60.
- Eder and Valenta, *Szb. Wien*, 1909 cxviii II.B, 511.
- Pollock, P.R.S. Dublin, 1912 xiii. 253.
- Morrow, P.R.S. Dublin, 1912 xiii. 269.
- Paschen and Bach, A.P. 1912 xxxix 897 (Z).
- Exner and Haschek, *Die Spectren der Elemente.*
- Huppers, *Zs. w. Ph.* 1913 xiii 46.
- Zeeman, *Ph. Zs.* 1913, xiv 405, 913.
- Bevan, P.R.S. 1910 lxxxiii 423, lxxxiv 209, lxxxv 54, lxxxvi 300.
- Kent, *Astroph. J.*, 1914 xl, 337 (Z).
- Meyer, *Astroph. J.* 1917 xlv 94.

Arc.				
Paschen	Bergmann	Meyer (I.A.)	Saunders	Lewis
26890.5 26875.3 23990.8 18697.0 17551.6 13556.4 12782.2 12232.4 2.5† 8127.1	12810 12350	8126.610	8127.0	8126.8
	Kayser & Runge (D.1)			Konen & Hagenbach
	P.3	6708.2*		
	S.3		6240.3	6240.8
	3*	6103.77		
	4†	4972.11		
	S.4		4636.3	4636.04
	4*	4602.37	03.2 01.6	
	5†	4273.44		
	S.5		4148.2	4149.1
	5*	4132.44	Living & Dewar (A.99)	
	6†	3985.94	3984.5	
	S.6			3924
	6*	3915.2	3913.5	
	7†	3838.3	3838	
	7*	3794.9	3799	
	8*	3718.9		
	9*	3670.6		
	P.4	3232.77	3232.2	
	P.5	2741.39	2741.0	
	P.6	2562.60	2561.5	
	P.7	2475.13		
	P.8	25.55		
	P.9	2394.54	2397.5	
	P.10		2373.9	
	P.11		59.4	

The lines marked "Fl." occur in the flame-spectrum, see O.p. 30.

*—6707.846 Fabry and Perot (I.A.) in flame.

Arc (cont).		Spark.		Intensity.	
Lehmann	Exner & Haschek	Exner & Haschek	Eder & Valenta (O.30)	Arc	Spark
8127.34				5	
				15	
				20	
				50	
				20	
				15	
				20	
				8	
				500	
Hagenbach					
4636.14 03.04 02.00	6708.10 Fl.	6708.09	6708.2	10r	10 Z''
	6240.6			1n	
	6103.38 Fl.	6103.80	6103.77	10r	10
	4972.10 Fl.	4972.02	4972.11	7	4n
	4603.17 Fl.	4603.2	4602.46	10r	10 ω
	02.20	01.7		10	6r
	4273.55 Fl.	4273.50	4273.52	5	4 bv
Huppers I.A.					
3232.61 2943.68 2741.31 2646.31 2562.50 2475.29 52.14 25.68 2398.54 94.48 2298.10 84.08 79.91 04.55	4132.3 Fl.	4131.05	4132.57	7	6 ω
	3986.2 Fl.		3985.90	3	1
		3921.8			1n
	3915 Fl.	3915		6	3
				1	
	3794 Fl.			5	2
	Fl.			3	1
				1	
	3232.83 Fl.	3232.80	3232.798	8r	8r ω
				5n	
	2741.37 Fl.	2741.32''	2741.57	6r	2r
				1n	
				5r	
				4r	
				1n	
				3r	
				1n	
				1r	
				1n	
				1n	
				1n	
				1n	

Flame.	Arc.		Spark.	
	Ramage	Kayser & Runge	Exner & Haschek	Eder & Valenta
6708.0	6708.2	6708.10	6708.07	6708.09
3232.82	3232.77	3232.8	3232.98	3232.80
2741.43	2741.39	2741.37	2741.57	2741.32
	2562.60			
	2475.13			
	2425.55			
	2394.54			

*—From the formula:—

$$\text{O.F.} = 43485.18 - \frac{109675}{\left(m - .04929 + \frac{.008185}{m-1} \right)^2}$$

SERIES IN LITHIUM.

Absorption.		Calculated*	O.-C.
Bevan	<i>m.</i>		
	2	6707.94	+.06
	3	3232.89	— .09
	4	2741.34	+.08
	5	2562.44	+.16
	6	2475.15	— .02
	7	2425.52	+.03
	8	2394.46	+.08
2373.9	9	2373.65	+.25
2359.4	10	2359.03	+.37
2348.5	11	2348.33	+.17
2340.5	12	2340.27	+.23
2334.3	13	2334.04	+.26
2329.0	14	2329.12	— .12
2325.2	15	2325.17	+.03
2321.9	16	2321.97	— .07
2319.3	17	2319.31	— .01
2317.1	18	2317.08	+.02
2315.2	19	2315.21	— .01
2313.6	20	2313.61	— .01
2312.2	21	2312.23	— .03
2311.1	22	2311.04	+.06
2210.0	23	2310.01	— .01
2309.0	24	2309.10	— .10
2308.3	25	2308.30	0
2307.5	26	2307.59	— .09
2306.90	27	2306.96	— .06
2306.48	28	2306.39	+.09
2305.87	29	2305.88	— .01
2305.41	30	2305.42	— .01
2304.99	31	2305.01	— .02
2304.63	32	2304.63	0
2304.29	33	2304.30	— .01
2304.00	34	2303.99	+.01
2303.73	35	2303.70	+.03
2303.46	36	2303.44	+.02
2303.24	37	2303.20	+.04
2303.03	38	2302.98	+.05
2302.83	39	2302.77	+.06
2302.59	40	2302.58	+.01
2302.38	41	2302.41	— .03
2302.20	42	2302.24	— .04

BAND SPECTRUM OF LITHIUM.

de Wetteville (Flame)

2668.9
2587.39
2413.8
2343.9

Huppers (Arc)

2668.9
2587.4
2413.8
2343.9

MAGNESIUM.

(A.100 D.5 M.74)

- Rowland and Tatnall, *Astroph. J.* 1895 i. 149 (Arc).
 Michelson, *Nature* 1899, lix 585 (Z).
 Reese, *Astroph. J.* 1900 xii 120 (Z).
 Hemsalech, *C.R.* 1901 cxxxii 959; 1910 cli 668.
 Crew, *Astroph. J.* 1900 xii. 170; 1902, xvi 246; 1904 xx 274.
 Runge and Paschen, *Astroph. J.* 1902 xv. (Z).
 Eder, *Deukoch Wien* 1903 lxxiv 45; *Beiträge* p.410.
 Fowler, *P.R.S.* 1903 lxxi 419; 1913 lxxxix 133.
 Fowler and Payn, *P.R.S.* 1903 lxxii 253.
 Hermann, *A.P.* 1905 xvi 684.
 King, *Astroph. J.* 1904, xix 225; 1905 xxi 236.
 Barnes, *Astroph. J.*, 1905 xxi 74; 1911 xxxiv 159.
 Saunders, *Phys. Rev.* 1905 xx 117.
 Loving, *Astroph. J.*, 1905 xxii 285.
 Pollok and Leonard, *P.R.S. Dublin* 1907 xi 229.
 Humphreys, *Astroph. J.*, 1907 xxvi 18.
 Miller, *A.P.* 1907, xxiv 105 (Z).
 Brooks, *P.R.S.* 1908 lxxx 218; *Astroph. J.* 1909 xxix 177.
 Paschen *A.P.* 1909 xxix 625; xxx 746.
 Royds, *Ph. Tr.* 1908 ccviii 333; *A.P.* 1909 xxx 1024 (Z); *P.M.* 1910 xix 285.
 Oellers, *Zs. w. Ph.* 1911 x 374.
 Harnack, *Zs. w. Ph.* 1911 x 281, 313.
 Dufour, *J. de Phys.*, 1911, i. 189.
 Lehmann, *A.P.* 1912 xxxix 75.
 Lyman, *Astroph. J.* 1912 xxxv 341.
 Cotton, *Astroph. J.* 1912 xxxv, 213 (Z).
 Pollok, *P.R.S. Dublin* 1912 xiii 253.
 O'Connor, *P.M.* 1912, xxiii 94.
 King, *Astroph. J.*, 1913 xxxviii 327.
 Grunter, *Zs. w. Ph.*, 1913 xiii 1.
 Huppers, *Zs. w. Ph.* 1913 xiii 46 (Arc).
 Nacken, *Zs. w. Ph.* 1913 xii 54.
 Hamm, *Zs. w. Ph.* 1913 xiii 105.
 Arnolds, *Zs. w. Ph.* 1914 xiii 313.
 Hampe, *Zs. w. Ph.* 1914 xiii 348 (Arc and Spark).
 Fowler, *Ph. Tr.*, 1909 ccix 451, 1914 cciv 225.
 Fowler and Reynolds, *P.R.S.* 1913 lxxxix 137.
 Quincke, *Zs. w. Ph.*, 1915 xiv 259.
 Hasbach, *Zs. w. Ph.* 1914 xiii 412.
 McLennan, *P.R.S.* 1916 xcii, 305 (A2852.22, 2073.36).
 Josewski, *Zs. w. Ph.* 1917 xvii 79.

Arc.				
Kayser & Runge (D. 5)	Paschen	Hermann	Lehmann	Fowler & Reynolds
	23991.3			
	23977.1			
	23963.6			
	S ₂ 17108.1			
	15768.3			
	15759.1			
	P ₃ 15028.3		15201.0	
	14877.1		15051.0	
	12083.2		12048.9	
	11828.8		11801.8	
	11054.3			
	10969.85			
	10963.2			
	10812.9			
	9258.3			
		9224.44	9110	
		8929.35	8920	
	S ₃ 8807.3	8806.96	8812.9	S ₂
			8530	
			8500	
			7950	
			7780	
	P ₄ 7656.6		6324.0	
	P ₅ 6315.6*			
	P ₆ 5783.4			
Kayser & Runge (D.5)		Exner & Haschek		
5711.56				
S ₄ 5528.75		5711.38		S ₃
3† 5183.84		5528.70		} m' = 1
3† 72.87		5183.78		
3† 67.55		72.87		
		67.50		

*—6319 Saunders.

Arc (cont.)		Spark.		Intensity.	
Nacken I.A.	Nacken I.A.	Exner & Haschek	Eder	Arc	Spark
				15	
				8	
				5	
				60	
				35	
				10	
				60	
				100	
				50	
				120	
				15Zn?	
				20	
				10	
				30	
				30	
				2	
				100	
	d.				
				35	
				5	
				3	
5711.127	5711.132	5711.35	5711.5	2	4
5528.466	5528.475	5528.72	5528.74	6	4 Z
5183.600	5183.689	5183.79	5183.79	10r	10 Zix
72.673	72.757	72.87	72.87	10r	9 Zvi
67.303	67.39	67.52	67.49	8r	8 Ziia

d— { 7896.37, } Fowler I.A.
77.13.

	Arc.			Spark
	Kayser & Runge (D.5)	Exner & Haschek	Fowler & Reynolds	Nacken I.A.
S ₅	4730.42 03.33	4730.40 03.40	S ₄ .	4730.08 03.069
	4571.33	4571.31		4571.114
				4584.29 71.129 4481*
S ₆	4352.18	4380.56 4352.35	S ₅	4351.940
S ₇	4167.81	4167.8	S ₆	4167.65
S ₈	4058.15	4059.15	S ₇	4057.81
S ₉	3987.08		S ₈ 3986.94 S ₉ 38.58 S ₁₀ 04.17	3986.81
				3898.29 95.69 93.43 92.14 90.33
			S ₁₁ 3878.73 S ₁₂ 59.39	

*—4481.324 in arc, 4481.306 in spark, 4481.438 to 4481.430 in stars, Crew,

{ 4481.499,
4481.284. King.

Spark. (cont.)				Intensity.	
Fowler	Fowler & Payn	Exner & Haschek	Eder	Arc	Spark
		5012.1			1n
		4860.4			1n
		56.9			1n
		4730.4		1n	1n
		03.3	4703.29	8r	3 Z
		4696.45			1n
		73.9			1n
		26.2			1n
		4584.0			1n
		71.29		4	1
4511.4					
{ 4481.495	E. ₁	4481.3D	4481.34		10n
81.297					
4434.20	4434			1	1n
4428.20	4429	4393.5			2n
4390.80	4391	4380.49		1	1n
4384.86	4385	4352.3D	4352.2	8	2n
4251		4167.7		3n	1n
4106.8				2r	
4018.3				2r	
		3898.3	3898.20		1n
		95.88	95.82		5n
			93.34		1n
		92.20	92.11		3n
		90.50	90.33		2n
	3879 H				
	3860 H				

§—4433.6, 4428.2, 4390, 4385 Brooks ; 4433.991, 4427.995, 4390.585, 4384.643

Fowler I.A. H—observed by Hemsalech in spark.

D—Observed by Demarçay in spark from chloride solution.

Arc.				
Kayser & Runge (D.5)	Exner & Haschek	Fowler & Reynolds	Huppers I.A.	Nacken I.A.
4* 3838.44	3838.45	$m=2$		3838.283
4* 32.46	32.49			32.306
4* 29.51	29.51			29.364
4† 3336.83	3336.83	$m_1=2$		3336.688
4† 32.28	32.31			32.163
4† 30.08	30.09			29.934
			3196.58	
			85.87	
5* 3097.06	3097.08	3097.03	3096.95	3096.914
5* 93.14	93.14	93.09		93.011
5* 91.18	91.20	91.19		91.093
	74.20			74.11
			3036.82	
5† 2942.21	2942.22	$m_1=3$	2942.12	2942.016
5† 38.67	38.70		38.65	38.487
5† 36.99	37.00			36.754
	36.61			36.516
	28.74			28.636
	15.57		15.54	15.471
			2868.07	
6* 2852.22	2852.25	2851.76	§ 2852.18	2852.128
6* 48.53	48.7	48.54	48.41	48.38
6* 46.91	47.1	46.88	46.79	46.75
	17.2		17.03	17.1
	15.8		15.65	15.9
	12.0		11.84	11.79
	11.2		11.04	11.06
	09.9		09.77	09.77
02.80	02.82		02.73	02.718

*—Saunders 3731, 3051, 2833, 2729.

§—Josewski (I.A.) 2852.137.

Spark.				Intensity	
Nacken I.A.	Fowler I.A.	Exner & Haschek	Eder	Arc	Spark
3850.02		3850.2			1n
49.23		49.3D	3849.02		1n
48.05			48.02		
38.299		38.43D	38.42	10r Zvi	10r
32.310		32.44D	32.46	10r Zvi	9r
29.369		29.50D	29.47	10r Ziv	8r
	3553.51				
	49.61				
	3886				
	35.04				
3336.695		3336.90	3336.89	10n	8
32.174		32.42	32.38	8n	5
29.953		30.20	30.15	4n	3
				1n	
				1n	
	3175.84				
	72.79				
	68.98				
	65.94				
			3139.6		1n
			35.1		1n
3106		3106.5	07.14		2n
	E { 3104.805				
	04.713				
3096.95		3097.2	3097.11	10r	2n
93.07		93.25	93.17	8r	2n
91.087		91.25	91.24	8r	1n
74.11		74.1	74.11	2n	2n
			50.75*		1
47.06		47.17	46.80		1n
				1	
	2971.70				
	69.02				
	67.87				
	65.19				
			2943.87		1n
2942.015		2942.18		8n	1n
		36.80	36.81	6n Ziv	
36.517	36.496			4n Zvi	10nx
28.67	28.625	28.93	28.89	3n Zvi	
15.469		15.60	15.58	4n Ziv	10x
				6	6
				1n	
2852.128	**	2852.20	2852.29	10nr	7 ω
48.46			48.44	4n	2
46.82			47.08	4n	2
16.83		17.0	17.29	1n	2n
15.54		15.8	15.67	1n	2n
				1n	
11.03		11.6	11.35	1n	2n
09.65			09.88	2n	
02.718	***	02.80	02.805	10r Ziv	10r

**—2852.251 Rowland and Tatnall, 2852.130 Klein, 2852.127 Grünter, 2852.127 Hampe, 2852.13 Hasbach, 2852.135 Frings, 2852.131 Quincke, 2852.128 Arnold.

***—2802.806, Rowland and Tatnall 2802.706, Arnolds, 2802.710 Quincke, 2802.714 Frings, 2802.716 Hampe, 2802.716 Hamm.

Arc.				
Kayser & Runge (D.5)	Exner & Haschek	Fowler & Reynolds	Huppers I.A.	Nacken I.A.
2798.04	2798.10		2798.02	2798.016
95.63	95.64		95.58	95.545
	95.01			
90.88	90.97		90.79	90.801
83.08	83.08		82.98	82.989
6† 81.53	81.51	— } $m^1 = 4$	81.38	81.431
79.94	79.95		79.883	79.853
6† 78.36	78.40		78.24	78.289
6† 76.80	76.82		76.72	76.704
2768.57	2768.6		2768.44	2768.367
65.47	65.5		65.38	65.246
7* 36.84	36.8	2736.63	36.57	36.60
7* 33.80	33.7	33.64	33.57	33.55
7* 32.35		32.16	32.09	32.07
7† 2698.44	2698.5	2698.23	2698.25	2698.16
7† 95.53		95.28	95.38	95.21
7† 93.97		93.85		93.75
			2687.21	
8* 72.90	73	2672.53	72.77	2672.56
8* 69.84		69.74	69.74	69.65
8* 68.26		68.24		68.20
8† 49.30		2649.12		2649.08
8† 46.61		46.27		46.24
8† 45.22		44.88		45.09
9* 33.13		2632.98		2633.04
9* 30.52		30.14		30.12
		28.73		
		2617.57		
		14.74		
		—		
		2606.73		
		03.98		
		02.59		
		2596.01		
		—		
		2588.37		
		85.63		
		84.32		
		2575.02		
		72.03		
		70.96		

Nacken I.A.	Fowler & I.A.	Spark.		Intensity	
		Exner & Haschek	Eder	Arc	Spark
2798.025	2797.989	2798.17	2798.12	4 Ziii	5 ω
95.547	††	95.62	95.632	10rZ	10
				2r	
90.808	90.768	90.99	90.97	4	10r ω
82.988		83.08	83.077	8r	6
81.429		81.52	81.521	8r	5
79.845	†††	79.93	79.935	10r	10r χ
78.288		78.34	78.381	8r	5
76.705		76.77	76.798	8r	6
				4nr	1n
				4nr	1n
2737.7?			2736.81	2n	1n
33.1			33.3	2n	1n
				2n	
				2n	
				2n	
				1n	
				1n	
				1n	
				1n	
2659	E.1 { 2660.909	2659.5	2660.0		1
	2660.843			1n	
				1n	
				1n	
				1n	
				1n	

††—2795.615 Rowland and Tatnall, 2795.540 Klein, 2795.543 Hampe,
2795.544 Frings, 2795.542 Burns, 2795.53 Quincke, 2795.538 Arnolds.
†††—2779.84 Quincke.

Arc.	Spark.	
Fowler & Reynolds	Huppers I.A.	Fowler I.A.
2565.00		
62.30		
60.96		
2557.29		
54.70		
—		
2551.22		
48.56		
—		
	2526.88	
	2412.61	E_2 2449.573
	2345.60	
	2313.86	E_1 2329.58
	2229.53	E_2 2253.87
	21.85	
	20.80	
	16.49	
		E_1 2202.68
		E_2 2166.28

According to Fowler and Reynolds, the First Subordinate (or Diffuse) series of Triplets is accurately represented by the following formula for the values of m shown:—

$$\text{O.F.} = 39759.06 -$$

$$109675$$

$$(m + 0.825371 + 0.023416m - 0.036786m^2)^2$$

and the Second Subordinate (or Sharp) Series by:—

$$109675$$

$$\text{O.F.} = 39759.18 -$$

$$(m1 + 1.375125 - 0.058307m - 0.002355m^2)^2$$

for the values of $m1$ shown.

The Rydberg series of single lines, marked S_4 , S_5 , etc., is approximately given by:—

$$\text{O.F.} = 26618.20 -$$

$$109675$$

$$(m + 0.314582 + 0.899929m - 0.269730m^2)^2$$

For the "4481" series of spark-lines (marked E_1), the oscillation-frequencies (of the less-refrangible components) are given with considerable accuracy by the formula $\text{O.F.} = 49780.44 - 4 \times 109885.65$

$$m^2$$

$$m = 4.5 \dots$$

The 'F.P.' doublets are given accurately by the formulae:—

$$\text{O.F.} = 40618.45$$

$$40648.95$$

$$4 \times 109679.3$$

$$(m + 0.947218 + 0.042317)^2 \text{ for the diffuse series (marked d)}$$

$$\text{and O.F.} = 40618.45$$

$$40648.95$$

$$4 \times 109679.3$$

$$(m + 0.930683 - 0.014220)^2 \text{ for the sharp series (marked s)}$$

$$m$$

MAGNESIUM HYDRIDE.

(A.175)

Hartley and Ramage, Tr. R. S. Dublin 1901 vii 339.

Basquin, Astroph. J. 1901 xiv i.

Porter, Astroph. J. 1902 xv 274.

Fowler, Month, Not. R.A.S. 1907 lxxvii 530 ; Ph. Tr. 1909 ccix 447.

Brooks, P.R.S. 1908 lxxx 218 ; Astroph. J. 1909 xxix 177.

King, Astroph. J. 1916 xliii 341.

Liveing & Dewar (A. 175)	Hartley & Ramage	Fowler
5618	5618 to 5578	5621.57
5566	5566 to 5526	
5513	5513 to 5458	
5210	5210 to 5183	5211.115
5181	5180 to 5112	
4849	4849 to 4813	4844.92
4803	4803 to 4772	4371.83 2430

MAGNESIUM BROMIDE.

Olmsted Zs.w.Ph. 1906, iv 255.

Wave-length	Intensity	Wave-length	Intensity
4007.2		3870.14''	5
3989.2		67.41''	5
77.2		63.95	6
63.3		62.73	6
44.8		61.58	6
25.4		60.21	10
3880.29	8 br	55.29	
77.96''	8		
75.23''	7		
72.48''	8		

MAGNESIUM CHLORIDE.

Olmsted, Zs. w. Ph. 1906 iv 255.

Eder and Valenta, Atlas typischer Spektren.

Wave-length		Intensity	Wave-length		Int.
Eder & Valenta	Olmsted		Olmsted	Eder & Valenta	
3925				3769.89	16
3891				67.16"	13
3834	3833.6	4	3764	63.76"	9
	28.9	6		59.96"	8
	23.0	8		56.11"	4
	15.3	10		51.24"	
	08.1	12		45.98	
3790	3778.68	10			
	75.38	20	3684		
	71.81	16	3610		

MAGNESIUM FLUORIDE.

Olmsted Zs. w. Ph. 1906 iv 255.

Wave-length	Intensity	Wave-length	Intensity	Wave-length	Intensity
3594.04	24 br	3580.94	13 br	3492.96	2 br
92.71	18 br	79.55	13 br	90.74	3 br
90.40	20 br	76.90"	10 br	88.48	2 br
89.03	10 br	73.41"	8 br	85.93	1 br
88.10	18 br	69.92"	6 br	72.42	2 br
86.84	20 br	66.25"	4 br	67	1 br
84.50	16 br	62.95"	4 br	40.69	2 br
83.06	16 br	59.45"	2 br	32	1 br

MAGNESIUM IODIDE.

Olmsted Zs. w. Ph. 1906 iv 255.

Wave-length	Intensity	Wave-length	Intensity
4146	1 br	3472.3	0
4108.9	2 br		
07.3	3 br	28.9	0
02.3	3 br		

MAGNESIUM OXIDE.

(A.175 G.49)

- Eder, Szb Wien 1886 xciv 378; 1893 lx 1 Beiträge iii. 60; i. 444/10;
 Deukschr. Wien 1902 lxxiv 45.
 Crew and Basquin, Astroph. J. 1895 ii. 100.
 Demarçay, Spectres electriques, 1895.
 Hartley and Ramage, Tr. R.S. Dublin 1901 vii 339.
 Porter, Astroph. J. 1902 xv 274.
 Morse, Astroph. J. 1904 xix 162.
 Olmsted Zs. w. Ph. 1906 iv 255.
 Brooks, Astroph. J. 1909 xxix 177; Nature 1908 lxxviii 198.
 Lockyer, P.R.S. 1887 xliii 117.

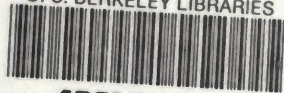
Brooks	Eder	Crew & Basquin	Lockyer	Olmsted	Morse	Inten- sity
6589						
6314						
6063						
5781						
5477						
	5467.8					1 2
	65.7					2 1
	61.8					2 1
	59.6					2 1
	57.9					2
	55.8					1 2
	53.6					2 1
	51.4					2 1
	49.5					2 1
	47.8					2 1
	45.8					2 1
	43.7					2 1
	41.7					2 1
	5439.4					2 1
	36.4					2 1
	33.9					2 1
	31.5					2 1
	29.0					2
5284						
49						
	5210.7					4
05	05.6					1
5191	5191.6					1
	77.23					1
5162	62.81					1 2
	60.68					2 1
	75.05					2 1
	53.66					2 1
	50.56					2 1
45	45.87					2 1
	39.15					2 1
	34.81					2 1
	30.34					2 1
	27.17					2 1
23	23.81					2 1
10	10.18					2 2

MgO

Brooks	Eder	Crew & Basquin	Lockyer	Olmstedt	Morse	Inten- sity
	5096.02					1
	5007.44	5007.473	5006.5		5006	10 qr
	4996.85	4996.92	4996.1		4995	8 br
		(5)				
	86.23	86.26	85.1		84	6 br
		(24)				
	74.81	74.75	73.5		74	4 br
		(21)				
	62.45	62.85	61.3		61.5	3 br
		(20)				
	49.30	49.50	48.4			2 br
		(20)				
	35.01	35.17	34.4			1 br
	23.65					1
	13.37					$\frac{1}{2}$
	03.36					$\frac{1}{2}$
4826						
20						
11						
02						
4791						
81						
71						
					4449.0	
					4443.5	
				3980.9		
				51.8		
				44.5		
					Demarçay	
				3936.6		
				28.2		
				21.2		
				14.6		
	3898.20					1n
	95.82					3n
	93.34					1n
	92.11					2n
	90.33					1n
				3880.6	3880.0	br
	65.96					1
	61.56					$\frac{1}{2}$
	60.28			59.9		$\frac{1}{2}$
	58.88					$\frac{1}{2}$
	55.92			55.2	54.3	1
	54					
	53					
	50					
	48.40			47.5	49.0	2
	47.21					$\frac{1}{2}$
	44.75					2
	42.16					1
				38.4		
				32.7		
				29.3	27.0	bv
				24.6	23.6	bv
				22.7	22.3	br
	23.93					1

Brooks	Eder	Crew & Basquin	Lockyer	Olmsted	Demarcay	Inten- sity
	17.19			20.7	20.0	bv
				18.3	18.9	1 br
				15.7	16.9	
				12.4	14.2	bv
	10.65			10.3	11.3	2 br
				07.4	06.0	
	05.67			05.7	04.8	1 bv
	04.51			02.2		1 br
	3798.49			3798.3	3799.1	1
				95.8		bv
				92.3		
				87.9		bv
	84.4			82.8		$\frac{1}{2}$
	78.33			77.5		$\frac{1}{2}$ bv
	72.88			73.0		1
				69.9		bv
	66.42			66.4		1
				63.6		bv
	3756.11			3759.2		$\frac{1}{2}$
	51.58			51.3		$\frac{1}{2}$ bv
	46.22			45.9	3741.1	$\frac{1}{2}$ bv
				37.5		bv
	31.11			31.3		$\frac{1}{2}$
	25.76			25.0		5n
	24.74					6n
	21.34			19.9		8n
	20.65					10n
	14.39			12.9		$\frac{1}{2}$
	—			09.4		bv
	06.91			08.2		$\frac{1}{2}$
	04.29			04.5	04.2	$\frac{1}{2}$ bv
	01.64			03.1		$\frac{1}{2}$
	3694.94			3694.6	3694.5	bv
	90.95			91.2		$\frac{1}{2}$
	88.53				88	$\frac{1}{2}$
	86.59					$\frac{1}{2}$
	84.45			84.3		
	83.30					
	81.24					
	75.78			75.6		
	72.23			71.7		
	—			64.7		
	59.89			60.5		
	34.28			33.5		
	27.83			27.3		
	21.34			20.9		

U. C. BERKELEY LIBRARIES



C051764031

948396

Qc453

W3

App. AA

THE UNIVERSITY OF CALIFORNIA LIBRARY

